

METHODS FOR THE DETERMINATION OF FILM CONTINUITY AND GROWTH MODES IN THIN DIELECTRIC FILMS

Abstract

The invention provides methods for determining film continuity and growth modes in thin dielectric films. The continuity determining method comprises: depositing a material on the substrate using a first value of a growth metric; depositing an amount of charge on a surface of the material; repetitively measuring a surface voltage of the material until an onset of tunneling to provide a V_{tunnel} (or E_{tunnel}) value; repeating the above steps for different values of the growth metric; and comparing the V_{tunnel} (or E_{tunnel}) values for different values of the growth metric to provide a measure of the continuity of the material on the substrate. The growth modes of the material can be determined by comparing the first derivative of the V_{tunnel} or E_{tunnel} per growth metric curve versus the growth metric, and examining the linearity of the results of the comparison.